Nov. 13, 1928. 1,691,798

H. F. CYPSER

INDICATOR FOR ELEVATORS OR THE LIKE

Filed Dec. 16, 1926 3 Sheets-Sheet 1

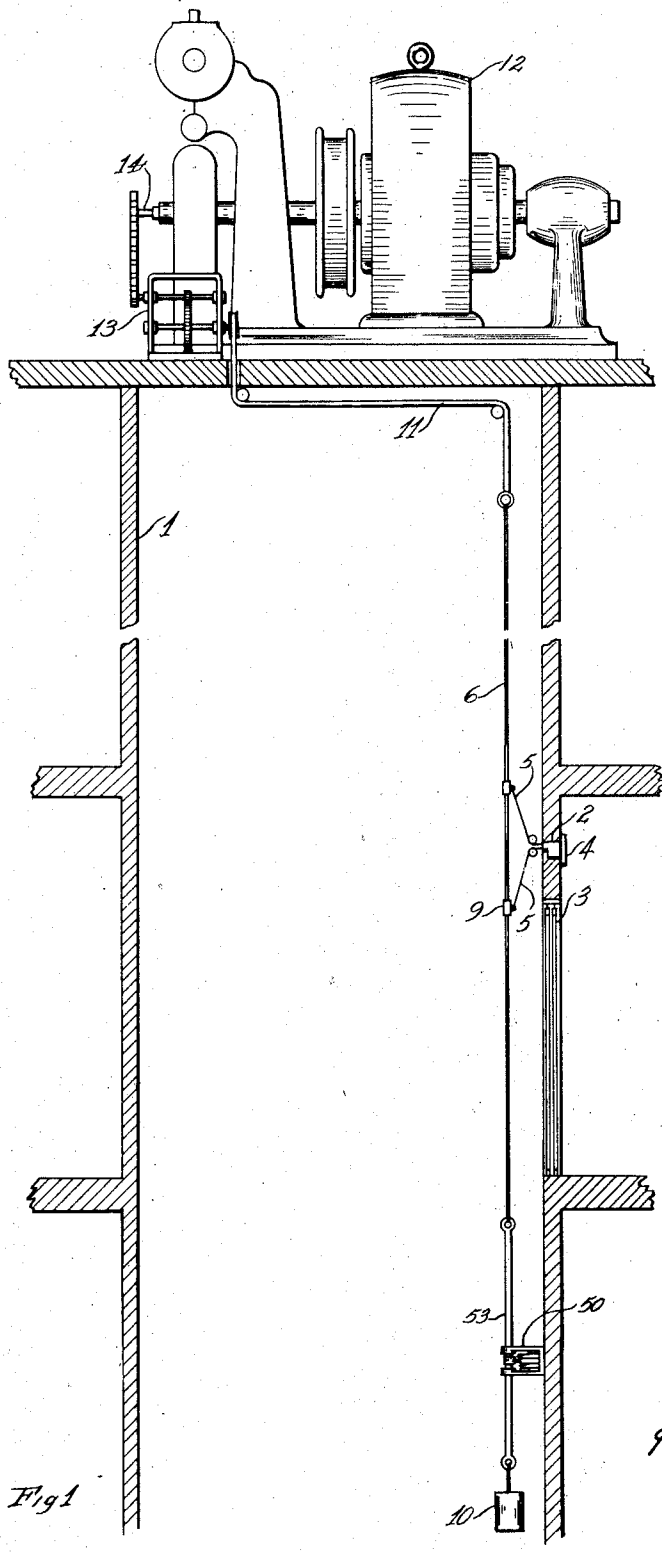
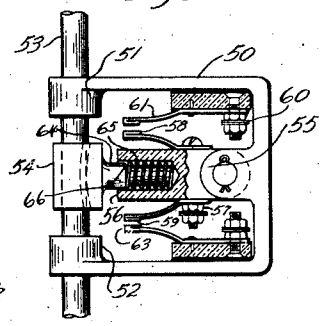


Fig 1

Fig 8



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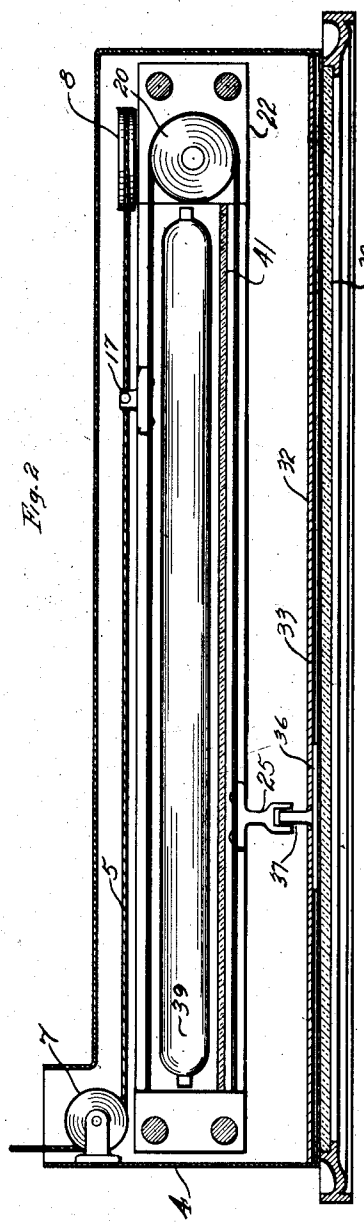


Fig. 2

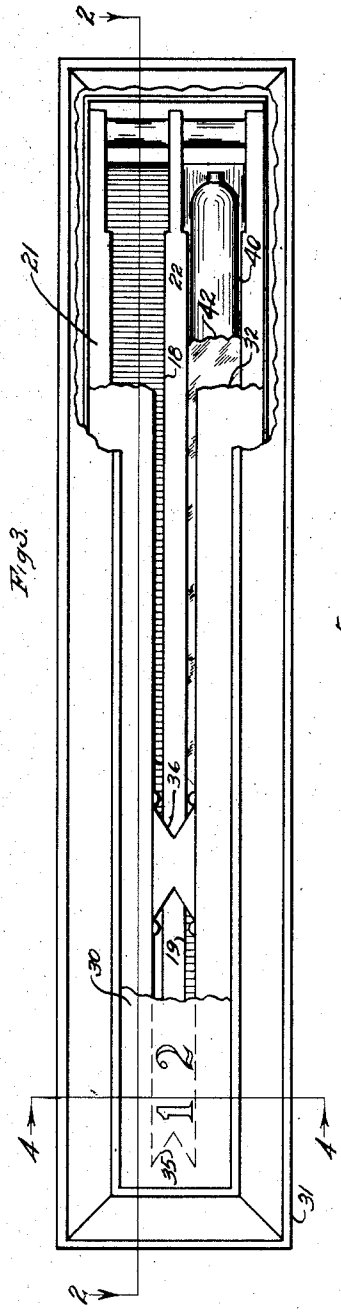


Fig. 3

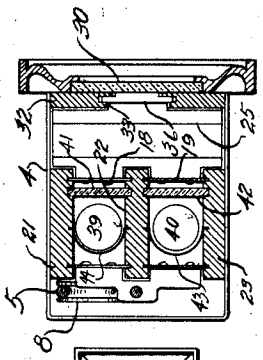


Fig. 4

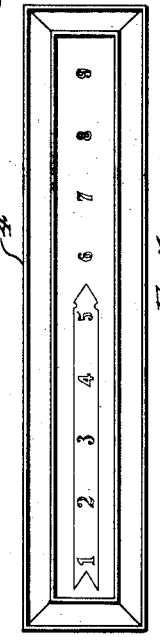


Fig. 7.

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INDICATOR FOR ELEVATORS OR THE LIKE

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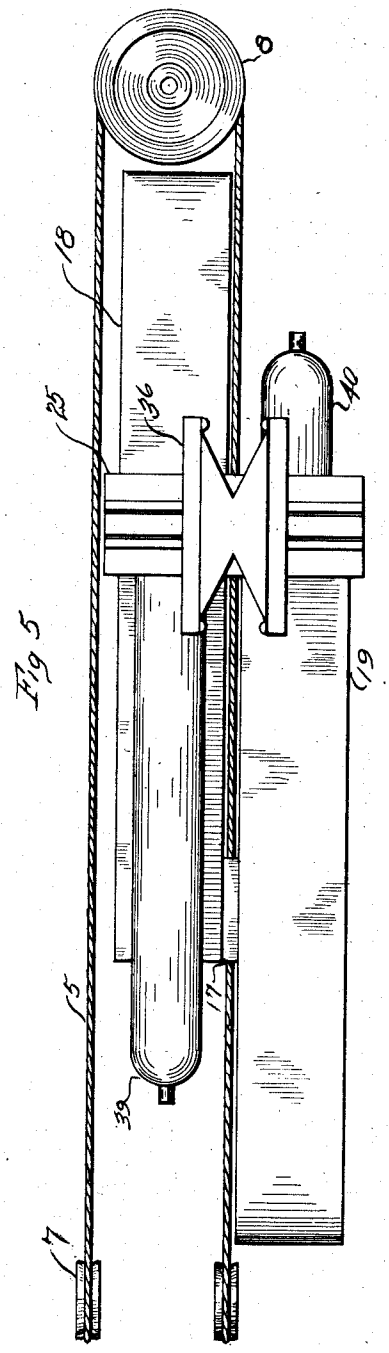


Fig. 5

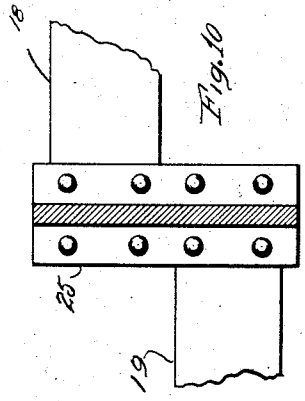


Fig. 10

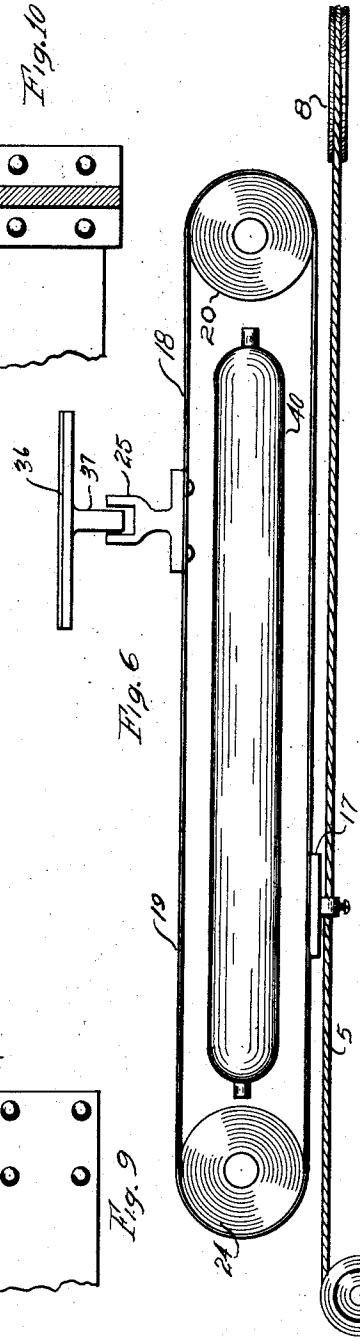


Fig. 6

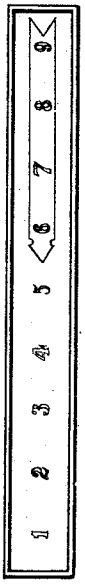


Fig. 11

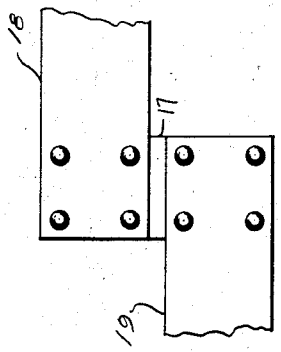


Fig. 9

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Patented Nov. 13, 1928. 1,691,798

UNITED STATES PATENT OFFICE.

HUGO F. CYPSER, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO ELEVATOR SUPPLIES COMPANY, INC., OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

INDICATOR FOR ELEVATORS OR THE LIKE.

Application filed December 16, 1926. Serial No. 155,238.

This invention relates to indicator mechanisms, and particularly to a type of indicator mechanism suited for use in indicating the position and progress of an elevator; although many, if not all, of the novel features may be utilized in other situations for indicating the position or progress of other bodies, such as cars, trains, or the like.

One of the objects of the invention is to provide a moving indication, rather than an entirely stationary indication. In this connection a feature of the invention lies in the provision of an expanding, or elastic, index element, such as an arrow; the expansion, or stretch, of the index member being in proportion to, and in fact produced by, the amount of movement of the body, such as an elevator.

I am aware that heretofore indicators have been known which were provided with a traveling index element which moved at a rate proportionate to the rate of movement of the associated elevator or other body; but so far as I have discovered, it is novel with me to provide an indicator giving the effect of an expanding, or stretching, index element, the amount of expansion, or stretch, being proportionate to the amount of movement of the associated traveling object.

I also believe it novel with me to provide an indicator giving the appearance of an elastic arrow having its tail end fixed and its indicating end movable, in a forward direction with respect to its tail end, at a rate proportionate to the movement of the associated traveling object.

Other objects and features of my invention lie in the form, construction, arrangement, and combination of the parts, and will become apparent from the following description, when read in connection with the accompanying drawings, wherein:

Figure 1 shows an elevator hatchway with my indicator mechanism mounted therein.

Figure 2 is a horizontal section thru the indicator casing, taken on line 2—2 of Figure 3.

Figure 3 is a front elevation, partly in section, of the indicator casing.

Figure 4 is a vertical section on line 4—4 of Figure 3.

Figure 5 is a front elevation of some of the operating parts.

Figure 6 is a bottom plan view of the parts shown in Figure 5.

Figure 7 is a view of the indicator casing showing the appearance produced during one stage of the operation of the indicating parts.

Figure 8 is a view, partly in section, of the preferred means employed for producing alternate operation of the two illuminating bodies.

Referring to the drawings, wherein like reference characters designate the same parts in the several views, numeral 1 designates an elevator hatchway having an opening in the front wall, as shown at 2, this opening 2 being above the doors 3 guarding the entrance to the elevator shaft.

Into the opening 2 is placed a hollow box or casing 4, to which a cord or other suitable cable 5 is led from a rod or wire 6 over pulleys, as shown more clearly at 7 and 8 in Figure 2, the cable then returning over a suitable pulley, mounted preferably under the pulley 7, to the rod 6, where it is fastened by a suitable connection, as shown at 9.

The rod 6, preferably under tension from a weight or other suitable means 10, is connected by means of a cable 11 with a part moving in correspondence with the movement of the elevator whose hoisting mechanism is shown in part at 12; suitable reduction mechanism 13 being interposed between said moving part (shaft 14, for example) and the cable 11.

The reduction ratio is preferably such as to cause rod 6 to travel a distance equal to the distance between successive floor characters on indicator 4 during the time the elevator takes to travel between these floors. In practice, then, the travel of the rod may be about 18 or 20 inches for a complete trip of the elevator from top to bottom of the hatchway.

Referring to Figures 2, 5 and 6, cable 5 is shown provided with a rider 17, positively fastened thereto as shown. This rider 17 in turn has attached thereto a pair of tapes, or screens, 18 and 19, of flexible non-translucent material, such as thin steel. Screen 18 has its left edge attached to rider 17, as shown in Figure 9, and screen 19 has its right end similarly attached, as shown. Screen 18 extends longitudinally of the casing 4 to a point near the right hand end

thereof, where it passes around a pulley or roller 20, as shown clearly in Figure 2. After passing around roller 20 screen 18 continues back longitudinally of the casing as far as the carrier 21, where it is attached, as shown in Figures 2, 6 and 10. This screen, which is movable with the cord 5 and rider 17, travels along suitable grooves or guideways in the stationary guide blocks 21 and 22, as shown best in Figure 4 and also shown in Figure 3.

Similarly screen 19 passes to the left of rider 17 along suitable grooves in the guide blocks 22 and 23 until it reaches roller 24. The screen passes around the roller 24 and comes back thru similar grooves in the front portion of guide blocks 22 and 23 until it reaches the front carriage 25, to which it is attached as shown in Figures 2, 6 and 10.

With such an arrangement it will be obvious that movement of cord 5 and rider 17 will be transmitted to rider 25 thru the instrumentality of the connecting screens 18 and 19. It will be observed that these screens are mounted substantially one above the other and each travels its own orbit, but at the same time the corresponding portions of the two screens are disposed in the same vertical planes. The purpose and function of these screens will presently appear.

The front portion of casing 4 is preferably provided with a panel of glass or other suitable translucent substance, as shown best at 30 in Figure 3, this panel fitting in the framework 31 of the casing. Behind the panel 30 is mounted a plate or screen 32 preferably of opaque, that is, non-translucent, material. This plate or screen 32, which extends substantially the entire length of the indicator casing, is provided with a slotted portion as shown best at 33 in Figure 4 and as shown also in Figure 3. This slotted portion extends substantially the entire length of the screen 32 and is located substantially centrally thereon and is preferably bifurcated at either end, as indicated in dash lines at 35 in Figure 3. This bifurcated construction is not essential but is preferred because it gives the indicating arrow a more desirable shape.

An index member 36 is provided for reciprocal movement along grooves provided in the slotted portion 33 of the fixed screen 32. This index member 36, shown best in Figures 3, 5 and 6, has a sliding fit in the slotted portion 33 of the screen 32 and has V shaped notches on either side, as shown best in Figures 3 and 5. The index element is also of opaque material and is provided with a lug 37, or other suitable means, by which it may be engaged by the carriage 25 so as to be moved when said carriage is moved, as shown best in Figure 6.

In the pockets formed by the tapes or screens 18 and 19 respectively, suitable illuminating means are mounted. In the preferred embodiment as illustrated the illuminating means consists of a pair of tubular electric incandescent lamps 39 and 40, lamp 39 being mounted in the upper pocket and lamp 40 in the lower pocket, as shown best in Figure 4. These electric lamps extend substantially the entire length of the indicator casing and are provided with suitable terminals, not shown, for the connection of current conducting wires, by which means current may be passed thru them to cause illumination of the indicator. While I prefer to use these elongated lamps, it is obvious that a series of the more common type of lamps may be employed, or any other suitable light emitting body or bodies.

Glass strips 41 and 42 are preferably provided in front of the lamps 39 and 40 respectively, but these are not indispensable. Shields 43 and 44 are also preferably provided in the rear of lamps 39 and 40 respectively for the purpose of concentrating the light rays in the proper direction, but these shields are not to be considered as indispensable.

Having now described the principal parts which are contained in the indicator casing 4, I will now describe the effect produced by these parts when operating in response to movement of the associated elevator or other body, the motion of which is to be indicated. Supposing lamp 39 to be illuminated and lamp 40 to be extinguished and supposing further that the associated elevator is moving upwardly in its hatch, a corresponding but much reduced motion will be transmitted to the index member 36 thru the instrumentality of the driving connections 5, 17, 18 and 25 heretofore described in detail. With this situation the light rays from lamp 39 will be free to pass thru the front of the indicator casing and thru that portion of the slot 33 which lies between the left end 35 and the traveling index member 36. Therefore panel 30, or that portion thereof which is embraced by the slotted portion 33 just referred to, will be illuminated, and will give the appearance suggested in Figure 7 when the elevator reaches a point just beyond the fifth floor, for example. As for the remainder of the slotted portion 33, to wit, that portion lying between index member 36 and the right hand end of the casing, the light rays from lamp 39 will be excluded therefrom, due to the fact that the movable screen 18 and rider 25 block the passage of light rays to this area. As the index member 36 moves along to the right, screen 18 also moves correspondingly to the right and hence the excluded area of the slotted portion 33 grows smaller and smaller.

Now let it be supposed that the elevator or other body whose position or progress is being indicated reverses its direction of

motion and starts to return to the point of origin. Upon reversing the lamp 39 will be extinguished and the lamp 40 illuminated by suitable means hereinafter described. Instantly thereupon the area previously illuminated will become dark, including the V shaped portion at the head of the arrow, and the area previously dark will be illuminated, including the opposite V shaped portion, thus causing the arrow to point in the reverse direction, the effect being substantially as shown in Figure 11. This result is produced, it will be understood, due to the fact that screen 19 is interposed between lamp 40 and the portion of the slot 33 to the left of the index member 36, while nothing is interposed between the lamp 40 and the portion to the right of the index member 36. In other words the upper screen 18 serves to exclude the light from lamp 39, when illuminated, to one side of the index member 36, but since screen 18 is not in the path of lamp 40, it does not prevent passage of light from the latter source to the right of the index member 36. The reverse effect is produced by screen 19, as just explained, and as is evident from the drawings.

The preferred means for causing the alternate illumination and extinguishing of lamps 39 and 40 is shown at 50 in Figure 1 and in larger detail in Figure 8. In the preferred form as illustrated this means comprises a circuit making and breaking device mounted at the side of the hatchway and provided with projecting guide brackets 51 and 52, thru which rod 53 attached to rod 6 is free to reciprocate. Substantially midway between guide brackets 51 and 52 is a bearing 55 in which is pivotally mounted an arm 56, provided with a terminal post 57, serving for the attachment of a current conductor (not shown) and contact fingers 58 and 59.

On the under side of bracket 51 is mounted another terminal post 60, suitably insulated as shown, and supporting a contact finger 61. Similarly on bracket 52 a terminal post and contact finger 63 is provided.

Arm 56 has a socket, or hole, for the reception of pin 64 and spring 65, which is coiled about the pin 64 and exerts a pressure against the shoulder 66 on said pin. The pin extends outwardly from the arm 56 and is yoked at its outer extremity to embrace rod 53, as shown at 54.

With such a construction it is obvious that downward movement, for example, of rod 53 will cause a downward tilting of pin 64 due to the friction created between these two members by reason of the action of spring 65, which will tend to hold the pin in this downwardly tilted position just as long as the rod 53 moves downwardly.

The effect of this tilting of pin 64 is to tilt arm 56 in the downward direction about its pivot in bearing 55 and thereby cause an electric circuit to be closed to the indicator lamp 40, for example, thru the engaging contacts 59 and 63.

Now upon reversal of the elevator, the upward movement of rod 53 will carry pin 63 back to its upper limit of movement due to the same frictional engagement. The effect of this is to tilt arm 56 upwardly about its pivot, thereby establishing contact between fingers 58 and 61, closing a circuit to lamp 39, and breaking the circuit to lamp 40 by the separation of fingers 59 and 63. In other words, lamps 39 and 40 are operated alternately in response to reversal of movement of the body whose position and progress is being indicated.

It is to be understood that the illustrations and description herein given in detail are merely for the sake of clearly disclosing one embodiment of the subject matter of this invention; and other forms, constructions, arrangements, and combinations fairly falling within the spirit of my invention or the scope of the appended claims are to be considered as embraced in these Letters Patent. Furthermore, while my novel indicating mechanism will find a very apparent utility in connection with the signaling of elevators, I do not limit myself to such application, as other uses and adaptations will readily occur to those skilled in the art of indicating the position and progress of moving bodies.

As to the disposition of the indicator proper, it may, of course, be disposed vertically or at an angle; and it is to be understood that the horizontal mounting is illustrated herewith merely because it is preferable. The invention is not limited to any particular disposition or shape, for the indicator, and the claims are to be construed broadly in this respect as well as in other respects.

I claim:

1. An indicator mechanism for an elevator comprising a fixed screen, two separate sources of light behind said screen, a movable pointer positioned between said screen and said sources of light so as to cast a shadow on said screen, means for confining the light rays from one of said sources to the portion of said fixed screen lying on one side of the shadow cast by said pointer, thereby forming an illuminated area terminating at one edge of said shadow, means for confining the light rays from the other of said sources to the portion of said fixed screen lying on the other side of the shadow cast by said pointer, thereby forming a second illuminated area terminating at the other edge of said shadow and situated in the longitudinal projection of said first named area; means for energizing one of

said sources of light while the elevator is ascending and the other source of light while the elevator is descending so that one of said areas remains dark while the other is illuminated; and means for moving said pointer and confining means in synchronism with said elevator, thereby causing one of said areas to expand into the other.

2. An indicator mechanism for an elevator comprising a fixed screen, two separate sources of light behind said screen, a movable pointer positioned between said screen and said sources of light so as to cast a shadow on said screen, means for confining the light rays from one of said sources to the portion of said fixed screen lying on one side of the shadow cast by said pointer, thereby forming an illuminated area terminating at one edge of said shadow, means for confining the light rays from the other of said sources to the portion of said fixed screen lying on the other side of the shadow cast by said pointer, thereby forming a second illuminated area terminating at the other edge of said shadow and situated in the longitudinal projection of said first named area; means for preventing the illumination of both said sources of light at the same time so that one of said areas remains dark while the other is illuminated; including circuits to said sources of light and a switch in said circuits thrown by the reversal of the direction of movement of said elevator, and means for moving said pointer and confining means in synchronism with said elevator, thereby causing one of said areas to expand into the other.

Signed at Hoboken, New Jersey, this 9th day of December, 1926.

HUGO F. CYPSER.